

CYSTIC DEGENERATION OF THE MAMMA SHOW- ING TRANSFORMATION INTO SCIRRHOUS CARCINOMA.¹

BY ALLER G. ELLIS, M.D.,
OF PHILADELPHIA,

Demonstrator of Morbid Histology, Jefferson Medical College; Pathologist to the Odd
Fellows' Home; Assistant Pathologist to the Philadelphia Hospital.

(From the Laboratories of the Jefferson Medical College Hospital.)

THE microscopic specimen that forms the basis of this communication was obtained during the study of a mamma removed from a woman of sixty-three years by Dr. W. W. Keen, through whose courtesy I am permitted to report the findings. The mamma contained a hard nodule 2.5 centimetres in diameter to one border of which was attached a long, thin band of tissue having the same general characteristics as the nodule itself. A number of the axillary lymph nodes were enlarged and hard. Histologic examination shows that portions of the mammary gland are involved by chronic interstitial mastitis, as evidenced by the presence of an increased amount of perilobular and intralobular connective tissue. This change, however, is not a conspicuous feature of the specimen. Many of the lobules are the seat of cystic degeneration, or involution, that has transformed them, in some instances, into a single cavity lined by one or more layers of low cuboidal or polyhedral epithelial cells. In other instances, several small cavities are found in a lobule, distinct evidence of beginning coalescence of some of them being present. Many of these cavities are partially filled by masses of granular *débris* containing epithelial cells exhibiting varying degrees of necrosis. The most important departure from the normal, shown in certain of the sections, is the presence within the stroma of irregularly outlined masses of polyhedral epithelial cells. These cells are

¹ Read before the Pathological Society of Philadelphia, May 28, 1903.

not limited by any membrana propria, but infiltrate the tissue in an irregular manner (Fig. 1). A significant fact is that, at several points in the wall of one of the large cavities previously described, the epithelial cells forming the lining have broken through the wall and are directly continuous with the



Carcinoma arising in a mamma the seat of cystic disease.

- A. Necrotic detritus contained within a cyst.
- B. Proliferating epithelium lining the cyst. At points this layer shows desquamation into the cyst cavity.
- C. C. Two points where the epithelial lining of the cyst is continuous with the epithelium of the alveoli of adjacent carcinomatous tissue.
- D. D. Epithelial nests characteristic of this type of carcinoma.

irregular masses of cells contained in the adjacent fibrous stroma. This cavity contains a large amount of granular *débris* and partially necrotic cells, and in other ways shows its identity in type with the cavities that are bounded by a membrana propria, and have been formed, or are in process of formation, from the acini of the gland. The enlarged axillary lymph

nodes contain large masses of epithelial cells similar to those in the mamma.

The diagnosis rendered in this case—cystic involution of the mamma undergoing transformation into a scirrhus carcinoma—brings up a question that has been debated at length, many surgeons not believing that this change occurs. The study of a number of specimens of both cystic involution and carcinoma of the mamma has led the writer to believe that there is an intimate relationship between the two conditions. In other words, cystic involution may be, and perhaps often is, followed by carcinomatous change. It being impossible to prove this by the microscope in many instances, the present specimen, showing direct extension into the surrounding tissue of the epithelium lining a cyst, is thought to be worthy of exhibition.

Gross,¹ when considering the development of carcinoma, pictures much the same condition, but speaks only of the enlargement of acini or ducts, with proliferation and final extension of their epithelium, without mentioning previous cyst formation. That he did not consider cystic change to be a preliminary step in cancer formation is shown by the statement made in the chapter on cysts,² where he says, "In either event, the prognosis is favorable, as it is in all the cystic formations of the mamma."

Snow,³ under the title of "The Malignant Reversion of Mammary 'Cystic Fibroma,'" reports two cases,—one of transformation into carcinoma, the other into sarcoma. By cystic fibromas, Snow means the cyst formation that accompanies connective-tissue hyperplasia during the period of devolution or degeneration of the female breast after the approximate age of thirty-four years. This we take to be the origin of the cysts in the specimen under study. He states that the condition increases slowly for a term of years as a benign tumor, but surely in the end becomes associated with malignancy, either carcinoma or sarcoma, the former originating in the epithelium lining the cysts, the latter in the surrounding fibrous walls.

Sheild⁴ does not speak directly of the relation of cysts to carcinoma, but, after referring to the almost invariable presence of cysts in chronic mastitis, says that "The transition from chronic mastitis into cancer is considered so common as to have received notice from every writer on surgical pathology." For his own part he is inclined to the belief that many cases of cancer supposed to supervene upon chronic mastitis were cancer from the beginning, and that no previous chronic inflammation existed. Like Gross, he states that an early cancerous change is doubtless the spread of proliferating acinous epithelial cells into the connective tissue, but he does not mention cysts. He expresses serious doubt as to the generally accepted belief in the connection between cancer and chronic inflammation of the breast substance itself. The same writer in a later article⁵ advocates as treatment of cystic disease removal of the cysts or the injection method instead of amputation of the breast.

Johnson⁶ cites the case of a woman who had the left breast excised, because of cystic degeneration, in 1877. In 1882, the right breast was excised on account of the presence of a like condition. In 1889, a tumor which had been slowly growing for two years was removed from above the middle of the scar in the left side. This was found to be made up of two cysts containing papillary growths. The cysts were supposed to have developed from a fragment of mammary tissue left at the first operation. The chief interest in the case, according to Johnson, is found in the recurrence after ten years. This recurrence, especially of the type of cyst described, is to me suggestive of malignant disease.

Robinson⁷ reports a case of diffuse cystic degeneration of both breasts, the right being amputated in August, the left in November, 1894. The right showed chronic interstitial mastitis, was riddled with cysts, and contained evidence of carcinomatous change. The left was similar, with the exception that no malignant transformation was noted. Robinson believes that there is a causal relation between cyst formation

and malignant growth, and that cystic disease of the mamma should be subjected to radical treatment.

Bull⁸ begins the treatment of cysts of the breast by aspiration. Later operation in cases that refill, etc., is confined to excision of the cyst only. He states that there is little evidence that this condition degenerates into cancer. If it does, cancer certainly may be slow in its development. Cysts developing at or near the time of the menopause need not be interfered with.

Bryant,⁹ who at first argues against the causal relation of cystic disease and cancer, later drops this argument, and confines his discussion to the comparative merits of conservative and radical operations for cystic degeneration. His statements are somewhat conflicting. He says there is no reason to believe that women who have these cysts are more prone to cancer than those who do not have them, and that the condition is mostly amenable to local treatment without sacrifice of the breast. Later he states that "it seems probable, however, that all large cysts of the breast, if left untreated, will sooner or later become the seat of some proliferating intracystic growth which will be papillomatous, sarcomatous, or carcinomatous in its nature, according to the proclivity of the tissue to form, or of the individual to develop, either special variety." Bryant is an advocate of early operation for breast disease, for the following reasons: "Delay in removing the local disease, whether cystic or solid, is fraught with danger, whereas by early interference nothing but good can be achieved. In my belief, the presence of a simple cyst in the breast is no harbinger to future evil if it be treated and removed, although if left it may, without doubt, become a source of mischief; should a cyst containing intracystic growths be left untreated, it to a certainty will develop into a serious local affection." The treatment advised is the swabbing of simple cysts with carbolic acid or zinc solution and the removal of cysts which contain any intracystic growth. We take from Bryant's article that he admits the possibility of cystic disease becoming malignant, but his principal argument is nevertheless for conservative treatment of the condition.

Jonathan Hutchinson¹⁰ says: "It is admitted that these cysts start in the terminal acini or ducts, and are due to the constriction of the wall by the increasing fibrous tissue. The changes that the lining epithelium undergoes readily suggest a termination in cancer, but I believe with Bull and others that there is no proof of such transformation. The matter is of practical importance; many such breasts are excised with the fear that cancer will supervene; but there is an important argument against such excision, namely, that when one breast has become the seat of fibrous degeneration and cyst formation, the other gland will probably follow suit. Few women would submit to the successive removal of both breasts unless there was really good reason for believing that grave danger was thereby avoided. I would repeat that there is no evidence that carcinoma especially selects the breasts that are the seat of multiple cysts, and that, unless the patient is very anxious about the condition, it is better to leave them alone."

The question of treatment is beyond the province of this paper; the foregoing references to the literature of the subject being given because of their bearing on the pathological problem under consideration. It will be noted that exceedingly diverse opinions are held.

In only one way can these differences be reconciled and the true relation of the two conditions determined, and that is by the co-operation of the surgeon and pathologist, the former observing critically the clinical history of these cases, *whether operated on or not*, the latter making a careful and complete histological study of removed specimens. The question is not one for mere theorizing or the occasional exchange of conflicting opinions. Its settlement means much. Negative proof of the change means to a certain number of women the saving of one or both breasts; positive proof means to a larger number of women the saving of life. The cause of cancer is unknown, and the results of treatment are in too many instances disheartening. The only hope of lowered mortality at present offered by surgeons is that of earlier diagnosis and operation. Operation during the precancerous stage of certain affections known

at times to undergo malignant change, as leucoplacia lingue and gastric ulcer, has its advocates. It is high time for the surgeon and pathologist to determine more definitely whether cystic degeneration of the breast is a precancerous manifestation. This is simply a question of earlier diagnosis, a problem to which every surgeon is committed.

In closing, the writer wishes again to emphasize his belief in the strong probability of malignant transformation occurring in cases of cystic degeneration of the female breast. The accompanying specimen, showing the transformation clearly, is offered as a contribution to the evidence in favor of the view indicated.

[NOTE.—Since this article was put in the hands of the printer, there has appeared a valuable contribution to the study of cystic disease of the mamma by Greenough and Hartwell.¹¹ They have examined a series of thirty cases of this condition, which they prefer to designate as chronic cystic mastitis, following the suggestion of Koenig. In three of the thirty specimens carcinoma was present as a secondary lesion, but was of the adenocarcinomatous type, no evidence of scirrhus being found. The writers conclude that "the danger of the transition of chronic cystic mastitis to adenocarcinoma is sufficient to make the removal of the entire gland advisable in all but very early and slight degrees of the affection." The operation advised is the subcutaneous resection of the entire gland without removal of the nipple.]

REFERENCES.

- ¹ Tumors of the Mammary Gland, 1880, p. 127.
- ² Loc. cit., p. 187.
- ³ Transactions of Pathological Society of London, 1895, p. 187.
- ⁴ Diseases of the Breast, London, 1898.
- ⁵ British Medical Journal, May 18, 1901.
- ⁶ British Medical Journal, October 24, 1891.
- ⁷ Lancet, March 7, 1896.
- ⁸ Medical Record, April 22, 1899.
- ⁹ Lancet, April 28, 1900.
- ¹⁰ Philadelphia Medical Journal, May 16, 1903.
- ¹¹ Journal of Medical Research, June, 1903.